Name: Date:

Polynomial Factoring solution (version 658)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 + 2x + 29 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(2) \pm \sqrt{(2)^2 - 4(1)(29)}}{2(1)}$$

$$x = \frac{-(2) \pm \sqrt{4 - 116}}{2(1)}$$

$$x = \frac{-2 \pm \sqrt{-112}}{2}$$

$$x = \frac{-2 \pm \sqrt{-16 \cdot 7}}{2}$$

$$x = \frac{-2 \pm 4\sqrt{7}\, i}{2}$$

$$x = -1 \pm 2\sqrt{7}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $-5 - 9i$ and $2 - 7i$ in standard form $(a + bi)$.**

Solution

$$(-5 - 9i) \cdot (2 - 7i)$$

$$-10 + 35i - 18i + 63i^2$$

$$-10 + 35i - 18i - 63$$

$$-10 - 63 + 35i - 18i$$

$$-73 + 17i$$

Polynomial Factoring solution (version 658)

3. **Write function $f(x) = x^3 + 2x^2 - 13x + 10$ in factored form. I'll give you a hint: one factor is $(x - 1)$.**

Solution

	1	2	-13	10
1		1	3	-10
	1	3	-10	0

$$f(x) = (x-1)(x^2+3x-10)$$

$$f(x) = (x-1)(x+5)(x-2)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = -(x+8)^2 \cdot (x+5)^2 \cdot (x+1) \cdot (x-3)$$

Sketch a graph of polynomial $y = p(x)$.